

REMARKS

Status of Application

Claims 1-15 are all the claims pending in the application. Claims 1-5 have been rejected by the Examiner under 35 U.S.C. § 102. Claims 6-15 are allowable in their present form.

Claim Rejection Under 35 U.S.C. § 102

Claims 1-5 stand rejected under 35 U.S.C. §102(e) as allegedly being anticipated by U.S. Patent 7,158,018 to Schick ("Schick"). Applicant traverses this rejection for at least the following reasons.

Claim 1

Claim 1 requires "at least two tire input detection means... which are buried in a tread rubber on the outer side in the radial direction of a tire belt layer." The Examiner contends that Schick teaches this requirement of claim 1, pointing to the sensor units 38 depicted in Figs. 1 and 5, as well as the description of their position at col. 7, lines 15-26 and 35-38.

Fig. 1 of Schick clearly shows the sensor net 24 disposed between the belt 10 and the carcass 4. This is confirmed by the description at col. 2, lines 50-51, which state that "a sensor system or net 24 is disposed between the belt 10 and the carcass 4." Moreover, Schick at col. 7, lines 21-26 states that the sensor net is electrically conductive and electrically connects the plurality of sensor elements to a central unit.

Furthermore, the portions of Schick cited by the Examiner in col. 7 fail to contemplate the possibility that the sensor net 24 or sensor units 38 could be disposed outside the tire belt 10 in a radial direction. Schick at col. 7, lines 15-26, describes the apparatus broadly by describing only "a plurality of sensor elements embedded in a tire material within a region of the tire bounded by a tire tread." Furthermore, Schick at col. 7, lines 35-38 clearly states that "the sensor

net is disposed radially inwardly of a belt of the tire.” (emphasis added.) In contrast, claim 1 requires that the “at least two tire input detection means” are “on the outer side in the radial direction of a tire belt layer.” (emphasis added.) Thus, Schick does not disclose that the sensor system or the sensor net is disposed radially outwardly of the belt of the tire, and it is clear that the sensor unit 38 is disposed radially inwardly of the belt of the tire, since the sensor unit 38 is connected by the sensor net 24.

In addition, Schick shows use of “sensor element[s] such as pressure-sensitive foils or piezo elements for measuring pressure or stress.” These elements measure pressure or stress applied by a belt or localized extension of the tire structure. Accordingly, Schick’s invention cannot detect input from the road surface acting on the tire tread portion, in contrast to the invention of claim 1. A further distinction is that, if the sensors are disposed between the belt and carcass, it is difficult to precisely detect input from the road surface acting on the tire tread portion. Thus, Schick also fails to disclose a device having the capabilities of the present invention.

Thus, Schick fails to teach or suggest each and every element of independent claim 1. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of independent claim 1 and its dependent claims 2-5.

Claim 2

Regarding claim 2, Schick also fails to teach or suggest that the invention as set forth in claim 2 is configured to arrange two tire input detection means at linearly symmetrical positions that are equally distant in the axial direction from the center in the axial direction of the tire, respectively. Schick discloses that the sensor unit and the sensor net are disposed radially

inwardly of the belt of the tire, as explained above, but Schick does not disclose the required arrangement of the sensor unit.

Furthermore, the present invention according to claim 2 is also capable of detecting deformation of a tread ring when transverse force occurs, by a tire comprising two of the tire input detection means at linearly symmetrical positions, respectively. In particular, a difference of change of contact length can be measured, which occurs by deformation of a tread ring, at two points on both sides of an axial direction of the tire tread, i.e., toward the vehicle body side and outside the vehicle body side, respectively. Lateral and longitudinal force acting on each of the tires, such as a transverse force or load, can also be detected precisely by the difference between the above two points. Such effects according to claim 2 cannot be obtained from the invention of Schick. Thus, claim 2 and its dependent claims 3-5 are also patentable over Schick for at least these additional reasons.

Claim 3

According to claim 3, the tire input detection means is arranged on the inner side in the radial direction of a tread block contact portion, so that input from the road surface can be precisely estimated. Such an effect cannot be obtained from the invention of Schick, based on Schick's disclosure that the sensor unit is disposed on the inside of the belt. Thus, claim 3 and its dependent claims 4 and 5 are also patentable over Schick for at least these additional reasons.

Allowable Subject Matter

Claims 6-15 stand allowed by the Examiner. Applicant respectfully submits, however, that these claims are also patentable for reasons not included by the Examiner in the statement of reasons for the indication of allowable subject matter included in the instant Office Action.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

This Application is being filed via the USPTO Electronic Filing System (EFS). Applicants herewith petition the Director of the USPTO to extend the time for reply to the above-identified Office Action for an appropriate length of time if necessary. Any fee due under 37 U.S.C. § 1.17(a) is being paid via the USPTO Electronic Filing System (EFS). The USPTO is also directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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CUSTOMER NUMBER

/Richard Turner/
Richard C. Turner
Registration No. 29,710

Date: December 3, 2007